

Urinary tract infection in children

#1 presentation to paediatric urologist

A/w increased risk of underlying anatomical abnormality c.f. adults

Untreated episodic UTI a/w sepsis, renal scarring, hypertension and ESRF

Boys > girls in first year of life; girls > boys thereafter

Overall affects 5% girls and 1.5% boys in childhood

50% of girls will have a further UTI

No evidence that childhood UTI predicts adult UTI except in those with underlying anomalies

Organisms (top 3)

E Coli	85%
--------	-----

Proteus	
---------	--

Klebsiella	
------------	--

40% of children will have underlying urinary tract abnormality: of these;

VUR/scarring	70%
--------------	-----

Obstruction	12.5%
-------------	-------

Duplication	12.5%
-------------	-------

Other	5%
-------	----

Many of these abnormalities are insignificant. It has been estimated that significant abnormalities in 25%. Increased risk of finding underlying urinary tract abnormality in 2 situations:

Positive family history (VUR & duplication abnormalities heritable)

Febrile UTI

[No increased risk with recurrent UTI, age or male sex]

Diagnosis

Confirm definite UTI

Type of specimen important

Clean catch	Patience required
-------------	-------------------

Collection bag	Routine, few false positive/negative
----------------	--------------------------------------

Catheter/SPA	Equivocal cases only. Invasive
--------------	--------------------------------

Culture

$>10^5$ cfu/ml

$> 5 \times 10^6$ wcc/l significant pyuria

NB. UTI without pyuria controversial ? contaminant ? a/w scarring.

Conventionally investigated and treated as for UTI

Upper tract UTI a/w fever, rigors, vomiting and loin pain – not seen with simple lower tract UTI

Investigation

USS first-line in almost all cases: findings dictate further investigation (see below)

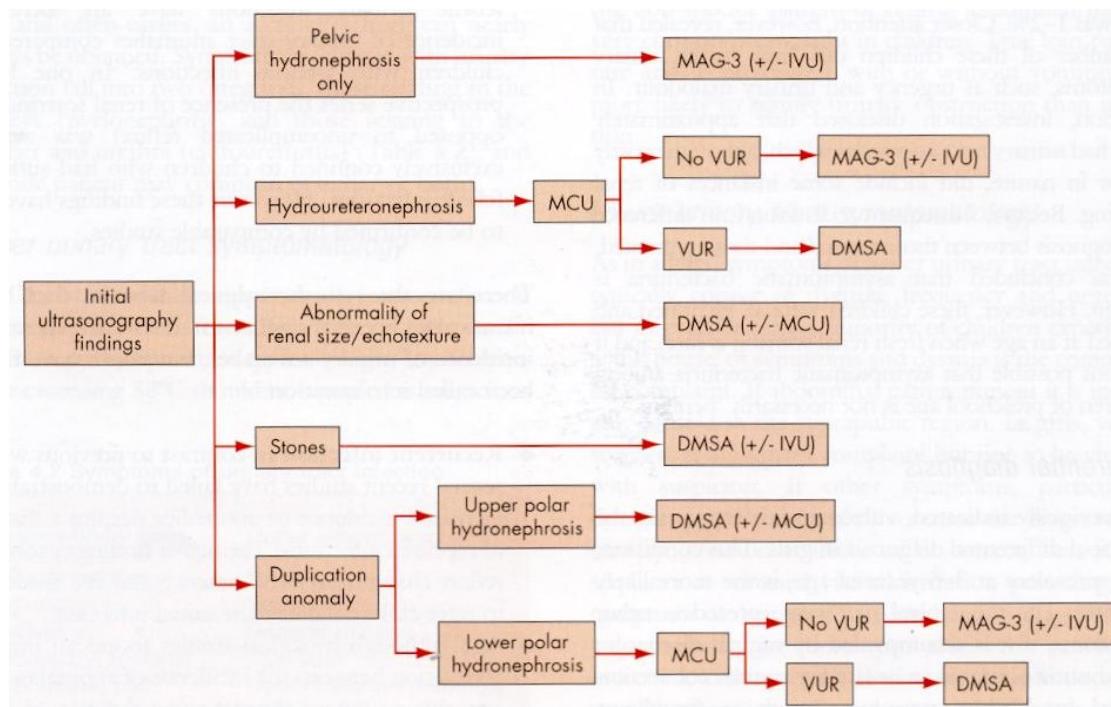
However USS has a false negative rate of ~40% for VUR and scarring. Thus further investigation (usually with DMSA) warranted in a number of high risk groups:

- < 2 yrs

- Febrile UTI

- FHx VUR

If USS and DMSA normal, MCUG indicated for all above. Once children get older than 4 the risk of new scar formation lessens, such that MCUG would only be performed for recurrent febrile UTI



Management

Appropriate ABx for acute UTI for 5-7 days

IV antibiotics for infants and older kids with pyelonephritis

Antibiotic prophylaxis for children <4 at least till investigation completed

Attention to dysfunctional voiding and bowel regime, particularly in girls

NICE guidelines for childhood UTI (August 2007 – CG54)

3 types of UTI: Typical, atypical and recurrent.

(i) Typical

E-coli, responds to Abx within 48 hours

(ii) Atypical

Non E-coli

No response to Abx within 48 hours

Severely unwell

Septicaemia

Abnormal creatinine

Bladder mass

Poor flow

(iii) Recurrent

3 x cystitis

2 x pyelonephritis

One of each

Investigation predicated on the observation that most underlying abnormalities are of dubious significance (VUR in ~70%) and after the age of 3 years the likelihood of renal scarring and deterioration is reduced.

Typical UTI	< 6 months	USS @ 6 weeks
	6 months to 3 years	None
	> 3 years	None
Atypical UTI	< 6 months	Acute USS DMSA 4-6 months MCUG 4-6 months
	6 months to 3 years	Acute USS DMSA 4-6 months
	> 3 years	Acute USS only
Recurrent UTI	< 6 months	Acute USS DMSA 4-6 months MCUG 4-6 months
	6 months to 3 years	Non-acute USS 6 wks DMSA 4-6 months +/-MCUG 4-6 months
	> 3 years	Non-acute USS 6 wks DMSA 4-6 months